

REMARKS

I. Status of Claims

Claims 1-9 are pending in this application. Claims 1 and 8 are independent. Claim 7 is currently amended.

The Office Action objects to claim 7.

Claims 1-9 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Sugiura et al. (USPUB 2003/0118876 A1) (“Sugiura”).

The Applicant respectfully requests reconsideration of these rejections in view of the foregoing amendments and the following remarks.

II. Claim Objections

The Office Action proposes amending claim 7 as follows:

“7. (Currently Amended) The fuel cell system according to claim 1, wherein the electric power storing device includes at least one of a secondary battery ~~[[and]]~~or a capacitor.”

Without waiving any argument, and to advance prosecution, claim 7 is amended as suggested to obviate any perceived ambiguity.

However, the Applicant respectfully submits that paragraph [0015] of the application as published states that, “[a]lso, the electric power storing device may include at least one of a secondary battery (or a storage battery) **and** a capacitor that are charged with electric power by the fuel cell.” (emphasis added)

III. Pending Claims

Independent claims 1 and 8 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Sugiura.

The Applicant respectfully submits that claim 1 is patentable over Sugiura at least because it recites, *inter alia*, “...and starting the stopped operation of the fuel cell when the

amount of electric power required by the load is equal to or larger than the reference value, and threshold value adjusting device for adjusting the reference value according to *internal electromotive force* in the fuel cell whose operation has been stopped.” (emphasis added)

The Applicant respectfully submits that claim 8 is patentable over Sugiura at least because it recites, *inter alia*, “...and starting the stopped operation of the fuel cell when the amount of electric power required by the load is equal to or larger than the reference value, a threshold adjusting device for adjusting the reference value according to *internal electromotive force* in the fuel cell whose operation has been stopped.” (emphasis added)

The inventions of claims 1 and 8 relate to a vehicle including a motor that generates power for the vehicle and a fuel cell system that includes a fuel cell, an electric power storing device and an electric power supplying device for supplying electric power to the motor from the fuel cell and the electric power storing device. In the electric vehicle, the electric power supplying device includes intermittent operation device for stopping operation of the fuel cell when an amount of electric power required by the load including the motor is smaller than a reference value, and starting the stopped operation of the fuel cell when the amount of electric power required by the load is equal to or larger than the reference value, and a threshold adjusting device for adjusting the reference value according to *internal electromotive force* in the fuel cell whose operation has been stopped. *See* paragraphs [0014] of the application as published.

The *internal electromotive force* is the force produced by the electrochemical reaction(s) of the fuel and gas remaining in the fuel cell after stoppage.

The electric power supplying device may include intermittent operation device for stopping operation of the fuel cell when an amount of electric power required by the load including the motor is smaller than a first reference value, and starting the operation of the fuel cell when the amount of electric power required by the load is equal to or larger than a second reference value, and the threshold adjusting device adjusts the second reference value according to *internal electromotive force* in the fuel cell whose operation has been stopped. *See* paragraphs [0015] of the application as published.

Thus, even when fuel supply to the fuel cell is completely stopped during the intermittent operation of the fuel cell, it is possible to prevent deterioration of response of the fuel cell when the fuel cell is restarted. Accordingly, it is possible to improve both of the fuel efficiency and response (for example, accelerator response) of the electric vehicle. *See* paragraphs [0016] of the application as published.

In the inventions of claims 1 and 8, the threshold value adjusting device adjusts the reference value according to *internal electromotive force* (i.e., the force produced by the electrochemical reaction(s) of the fuel and gas remaining in the fuel cell after stoppage) in the fuel cell whose operation has been stopped.

In order to reject this portion of the Applicant's claims, the Office Action cites that "[t]he electric power supply device (power supply apparatus 15) also has threshold adjusting means (control portion 48) for adjusting the reference value according to internal electromotive force (*voltage from the circuit*) in the fuel cell (60)...." *See* page 4 of the Office Action. However, the Applicant respectfully submits, the voltage from the circuit simply does not equate to the *internal electromotive force* claimed in the inventions of claims 1 and 8 as alleged. That is, one having ordinary skill in the art would recognize that *voltage from the circuit* is *different* from the *internal electromotive force* in the fuel cell.

Even if voltage from the circuit equated to the internal electromotive force (which it does not), there are other distinctions between the inventions of claims 1 and 8 and Sugiura. More specifically, the Office Action alleges that the threshold adjusting means is described in paragraphs [0078] and [0079] of Sugiura (which we note describes a third embodiment thereof). However, the Applicant respectfully submits, it appears that this third embodiment of Sugiura, addresses start-up the fuel cell (after stoppage) differently than the inventions of claims 1 and 8. For example, in paragraph [0091] Sugiura states the following:

When the switches 20 are closed to change the operating mode to the normal operating mode and the gas supply to the fuel cell 60 is begun, electric power is output from the fuel cell 60 in accordance with the load demand. However, where the load demand jumps suddenly, it is possible that the fuel cell 60 may suffer a temporary gas shortage, leading to a drop in fuel cell 60 output voltage to an undesirable level. One of the reasons

for a gas shortage in the fuel cell 60 is that the gas supply devices that supply gas to the fuel cell 60 require a predetermined period of time to supply the desired amount of gas corresponding to its drive signal. Another reason is the occurrence of a delay between the time at which the capacitor voltage $V_{sub.C}$ is detected and the time that the fuel cell 60 actually begins to generate electric power. When the operating mode is switched to the normal operating mode, the amount of gas supplied is typically determined such that the fuel cell 60 begins to generate electricity at the moment when the output voltage equals the first reference voltage $V_{sub.1}$, but due to the start-up delay of the fuel cell, the capacitor voltage may further drop when the switches 20 are actually closed and the fuel cell 60 begins generating electric power. In this case, it is possible that the fuel cell 60 will attempt to increase power generation significantly in order to supply electric power to the capacitor 24; this may reduce the output voltage of the fuel cell, leading to a gas shortage. *In this embodiment, however, this problem can be prevented because the first reference voltage $V_{sub.1}$ is set to increase as the capacitor voltage rate of increase declines and electric power consumption increases, and the fuel cell 60 starts up while the demand for the electric power generation by the fuel cell 60 is still low.* (emphasis added)

In other words, it appears that start-up is linked *to capacitor voltage, but not the internal electromotive force* as in the inventions of claims 1 and 8. That is, in the invention of claims 1 and 8, the second reference value is adjusted according to internal electromotive force in the fuel cell whose operation has been stopped. This is simply not described in Sugiura.

Since we note that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference,” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), Sugiura does not anticipate the inventions of claims 1 and 8.

Further, the other cited references **do not** provide any teaching, suggestion, or motivation in to modify Sugiura in the manner as claimed in the inventions of claims 1 and 8. As discussed in *KSR Int’l Co. v. Teleflex, et al.*, No. 04-1350, (U.S. Apr. 30, 2007), it remains necessary to identify the reason why a person of ordinary skill in the art would have been prompted to modify Sugiura, which describes a threshold value adjusting device that adjusts the reference value according to internal electromotive force in the fuel cell whose operation has been stopped, in the

manner as recited in the inventions of claims 1 and 8. Obviousness cannot be sustained on mere conclusory statements.

Accordingly, the Applicant respectfully submits, claims 1 and 8, as well as the dependent claims, are patentable over the cited reference.

IV. Conclusion

In light of the above discussion, the Applicant respectfully submits that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance. The Examiner is invited to contact the undersigned at (202) 220-4420 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 11-0600.

Respectfully submitted,

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